



# PROPHYLAXIS,

AN

## ANNIVERSARY ORATION

DELIVERED BEFORE THE

NEW YORK ACADEMY OF MEDICINE,

WEDNESDAY, DEC. 19TH, 1866.

BY

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&c., &c., &c., &c.

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*" Custodit Vitam qui custodit Sanitatem,  
Sed prior est sanitas, quam sit curatio morbi."*

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## ADDRESS.

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IN accepting the invitation to address you this evening, I have been governed alone by a sense of duty. Had I consulted my own wishes, or been guided by the estimate of my own powers, I should not have presumed to place myself in so embarrassing a position. But there are duties in life whose obligation should not be ignored, and it is no excuse for leaving them undone, that we cannot discharge them as brilliantly as some others. There is virtue even in the effort; and we should at least undertake to meet their calls, recognising the cardinal truth of Bacon, "that every man is a debtor to his profession, from which as men do of course seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends, to be a help and ornament thereto."

This is an occasion sacred alike to Memory and to Hope. To Memory, as a treasurer of past events, formal, impartial, inexorable; and to Hope, that joyous friend of man, whose torch is never quenched but in death. Standing near the close of another year, we look back across its past months of opportunity with thanksgiving and praise to the Author of all good. Its days now nearly numbered, and its record soon to be classed among things historical, admonish us of

another milestone passed in the journey of life. The budding spring, the gorgeous summer, the fruitful autumn, all the promises of seed-time and harvest, have been fulfilled in their appointed season, each of which has poured a lapful of blessings upon our land. Our days have been full, fragrant, satisfactory; our hours laden with golden opportunities; commerce and the arts have flourished as never before, and Science has added fresh laurels to her fame on every shore and beneath every sky. It is permitted us, therefore, to rejoice, and to hope in all directions; and it is well, accordingly, that there comes an occasion like this, when we can look back upon the accomplished past as a source of sustenance and encouragement, asking what is needed from us in the future, as a scientific body, to assist the progress of civilization and true philosophy. For, the acquisition of knowledge was not left to chance, but to reason aided by effort. Each department of science, therefore, owes a special contribution to the general cause of advancement. This debt is perennial. It can never be extinguished, and justly so, since it is the tax imposed upon all for the support of the great commonwealth of intellect.

For these reasons, and departing somewhat from the usual style of discourse adopted on this occasion, I have undertaken to lay upon the altar of our annual commemoration an offering which shall be sacred to Medicine alone. As this festival belongs exclusively to her, it is but right that first, midst, and last, all things should be said and done in her name, and to her honor. Accordingly, I have selected from the

field of medical philosophy for my theme the subject of Prophylaxis ; a topic which has loomed vast and shadowy in every system of medicine, both ancient as well as modern, and yet has remained behind all others in positive development. The very simplicity of the laws upon which it rests, seems to have blinded men to their importance as the natural basis of a system, although it might most justly be supposed that all would agree in recognising natural medicine to be the legitimate parent of rational medicine. Philosophers have indeed done so in all ages ; but practically, men think, as well as act, in herds, and what is not taught in schools is generally relegated to the department of Ideology, as only a museum specimen for the delight of curiosity-seekers. In reality, however, systems, like great cities, require time to construct them, and Prophylaxis has ever been to practical medicine what the Platonic Atlantis was to the Greeks—or Cathay and Zipango to the Middle Ages—a mythical land of unfulfilled promises. What Columbus did to resolve the former problem, and De Gama the latter—Jenner has already done in medicine, and others are closely following in his track. And to-day, the noblest offering which our profession can make to posterity, is the reduction of all previous elements of Prophylaxis into a system, which shall stand as a first bulwark everywhere against the encroachment of disease. In discussing this encyclopædic topic, I shall, not unmindful of the proprieties of the hour, limit myself to fundamental propositions in the domain of physics alone ; for the world of mind is in itself too imperial a realm to be trodden with



hasty strides, or made subordinate to matter. It deserves a special investigation under the best lights of Natural Philosophy and Metaphysics.

In an age like our own, fraught with the grandest results of human progress, and in this day of meridional civilization, the part played by science in the various fields of discovery has become one of the chief of national glories. All true progress begins and centres in her bosom; all enduring results, as potential for good in the future as in the present, start from her lap. Commerce in all its forms—education—the control of the physical forces—the conquest of matter, and the accumulation of wealth, are each in turn fed from this parent reservoir. Science is, in her benefactions to society, what the sun is in his genial warmth to the earth. Blot the one from the skies, and living nature perishes; paralyze the energies of the other, and man becomes as immovable as a vegetable. It is to science, then, as the expression of method, and a system of laws in all departments of the universe, that we owe our present progress and our future prospects. And we who stand related to her in so many ways, and have put our rootlets out in so many of her fields, cannot too ardently cherish this noblest of the systems under which all laws of matter may be classified and utilized.

Now in the hierarchy of the sciences, while all are equally sovereign in themselves, there are yet laws of precedence, and differences of dignity. As all originally begin with the Godhead, so each, as it follows His attributes more or less nearly, reflects the resem-

blance of its Author. As there is one glory of the sun, and one of the moon, and one of the stars, though all be equally heavenly bodies, so there are diversities of glory among the sisterhood of the sciences. And as everything on this beautiful earth was made for the happiness and prosperity, both secular and spiritual, of man, so all things take rank and precedence according as they directly or remotely contribute to these ends. If this be the law, and all observation seems to confirm it, then next always to the science that teaches of the salvation of the soul, and foremost among the physical sciences, stands that of **MEDICINE**. At all times and among all peoples somewhat of a Divine character has always been associated with it; and even our Saviour, when on earth, thought it not beneath His prerogative dignity to assume some of the functions of a physician of the body, as well as that of the Great Physician of souls.

It is not necessary, however, to review the history of Medicine, or to enter into that vast field of research, involving the rise and fall of successive systems, the commingling of religion with physical science, the multiple attempts at discovery in anatomy, and physiology, and chemistry, which occupied so many centuries, or the special contributions of different ages and different centuries to the storehouse of this great science. Its history, like that of most of its sisterhood, is linked with that of civilization. Wherever this has advanced, physical science has kept even pace, nor has it ever suffered itself to fall in arrear of the most forward of its compeers. Despite all cavil-



ling, it has passed beyond the domain of a conjectural science, and taken its place among the most positive of the sisterhood. And a system of medical logic has grown out of it, showing conclusively that the laws upon which it is founded are not based upon hypothesis alone, but have their origin in the immutable canons of nature. In this respect it is in advance of all the physical sciences; for it deals not simply with the materialities of the universe, but enters the domain of the passions, and deals with problems affecting our moral nature. And I cannot help feeling in this connection, that the labors of Pinel, Esquirol, and Conolly, have elevated it into an atmosphere beyond where even Harvey or Bacon had placed it. Slowly, and with the procession of the centuries, it has freed itself from dogmas of superstition, has cast aside alchemy and astrology, talismanic traditions and routine methodism, and now stands upon a pinnacle of reason, both founded upon, and justified by, experience. In this tendency towards rationalism it has never forgotten that God rules in all, and over all, things. And its best apostles have never failed to put upon record their solemn asseveration of a constant dependence upon the Deity, as well for the least, as for the greatest of their achievements. Under such convictions as these we cannot fear that the rationalism of any science will offend the Great Author of them all; nor that our little systems, as ephemeral as the sunshine, can cloud His glory among men. For one, I prefer to consider them only as so many stepping-stones with which He has provided us for a higher, and more exhaustive comprehension of

the laws of His universe ; and as they are offshoots of His omniscience, so does He smile upon every devout laborer, in whatever field engaged, who seeks with finite mind to approach Him through a study of His works.

“ Our little systems have their day,  
They have their day, then cease to be,  
They are but broken lights of Thee,  
And Thou, oh Lord ! art more than they.

“ We have but Faith—we cannot know,  
For knowledge is of things we see,  
And yet we trust it comes from Thee—  
A beam in darkness—let it grow ! ”

It is this constant growth in positive knowledge, beginning with the earliest civilized nations, and transmitted by each generation in successive waves to posterity, that has made the physical sciences the handmaids of commerce, legislation, and religion. And to-day, but for them, the Bible would not be found disseminating the comforts of a Christian belief in the distant isles of the sea, nor anæsthetics exist to rescue life from the shocks of pain, or the torture of inevitable operations.

But the practice of a science, limited as it is to the exigencies of particular cases, must ever fall behind the philosophy of that science. Even as the hand, however cunning in execution, must always fall behind the brain in scope of power ; so, a sedulous cultivation of a true system of philosophy in medicine, has done more to advance that science than the labors of thousands of simple practitioners. Professional experience is personal, and dies with its possessor ;

philosophy is cumulative and immortal, and descends unaltered to posterity. And without the development of such a philosophy, knowledge being only traditional, we should be standing little in advance of our fathers in any science. Every age has perceived and acknowledged this law of genesis, and consequently every age has produced its own philosophy. Yet, inasmuch as no great events happen prematurely, each in the fulness of time taking its appointed place, so, even amid the infancy of science, we perceive germs of thought and glimmerings of truth which have only fructified in after ages. For, if it requires centuries, and changes of government and laws to build great cities, or found empires, no less so is it with the establishment of a true system of philosophy. Battles must be fought between contending factions, persecutions be endured by defeated minorities, and schools be convulsed and overthrown, before the equilibrium of truth can finally be obtained; and whether in theology, metaphysics, or medicine, history ever consecrates the victory in language teeming with painful significance.

In the separate characteristic of every age we find one dominant idea. And that of our own, under the best sanctions of Christian belief, is the tendency everywhere manifested to convert dogmatic into rational philosophy, and to substitute a knowledge of the positivism of universal laws for that of empirical observation. In law, medicine, theology, and government, radical changes are being effected, because the educated mind of the world gives, as by a preconceived intuition of its truth, universal assent to this

proposition. It accepts it as a step forward, made in its own proper time and season, and the result of all those cumulative agencies of development which the art of printing and the Reformation inaugurated. In searching for fields of activity, it renounces at the start the idea of discovering new forces, and new worlds in which to employ them. All the physical forces existed at the dawn of creation as they do now. Light, heat, moisture, electricity, magnetism, gravitation, and matter, have never changed their character. It is only in the variety of their combinations that changes occur; but the elements behind remain as first created—simple, unvarying, absolute. Hence the wisdom of ages has taught us that the true field of employment for finite intelligence is inside, and not outside, of this realm. Under Providence, we are permitted to exercise ourselves illimitably within it, knowing that only fools or infidels seek to go beyond.

Convinced of this great law, which inexorably limits the human mind to the unfolding of new relations between physical forces, and not to the discovery of new forces, philosophy is constantly taking up the seed-thoughts of different ages, and endeavoring to develop them further. The astronomy of the Chaldeans and Egyptians has been used and verified in many of its computations by that of modern times; the mechanical forces by which the pyramids were built and obelisks raised have been further enlarged in the range of their activities; the medicine of the Arabs, and Greeks, and Romans, has furnished some data upon which to unfold new laws of disease and treatment.

so that no age has been completely barren of fruit useful to posterity. And every day, in recognition of this fact, we are searching for some one of those mysterious lost Arts, which we feel was the triumphal measure of a success achieved by a past age.

Now, in medicine, the great undeveloped seed-thought of every age and school has been, not the treatment of disease, which must be more or less empirical and personal, but the prevention of disease, which is philosophical, impersonal, and therefore overpeers it. And to-day, as by a spasm of remorse, that much-neglected goddess Hygeia, whose worship has heretofore been left to the caprice of individuals, has suddenly been reinstated, not in private houses alone, but in legislative halls, as one of the *Dii Majores* of our civil establishments. To-day, it is recognised judicially, that State medicine is a science and deserves a priesthood, and a place in the government of every commonwealth, as one of the chief safeguards to life. Truly, the world moves, the pendulum of the ages continues to swing, the arc of progress increases its diameter, and we may soon hope to reach a pinnacle in statesmanship corresponding to the Alpine heights upon which physical science has reared her last temples.

The prevention of disease, the seed-thought of many a past age, has always been recognised as a legitimate branch, a coequal system with therapeutics in the science of medicine. In fact, it constitutes the first and best chapter in its philosophy. All the fathers in medicine either allude to it, or incorporate some of its laws in their treatises. Even St. Clement, one of



the fathers of the Church, consecrates the largest portion of his treatise entitled *Pedagogos*, to individual Prophylaxis. And the practical application of this system through special rules, and known as Hygiene, has been constantly advised by the best authorities as a legitimate branch of therapeutics, and as constantly neglected by those whose faith is pinned exclusively upon the *Materia Medica*. Medical philosophers have always taught that "*medicè vivere est pessimè vivere*," while medical schools have rather inculcated an opposite doctrine, by not generally including hygiene among their curricula of study. Yet ancient schools had taught it as a fundamental branch of medical education; and while the fame of all other institutions of antiquity has perished from the memory of men, that of *Salernum*\* still endures, because of the imperishable legacy it has bequeathed to medicine in its code of health.

#### INDUCTIONS OF GENERAL PATHOLOGY.

One of the greatest discoveries connected with the existence of disease is the fact that it is not accidental or fortuitous, but the offspring of a definite law of development. Like everything appertaining to nature, it is thoroughly systematized, and renders

\* Quod Academiam Salernitanam maximè commendavit, et ejus gloriam transmi-it posteris, opus est illud "*De Conservanda Valetudine*," Roberto Duci Normanniæ et Regni Anglicani hæredi consecratum; tam propter dignitatem ejus Principis cui inscriptum est, tam propter utilitatem operis, et insolitum scribendi genus, utile simul et jucundum."

*Schola Salernitana de Conserv. Valetud.* Præfatio: Roterodami, 1657.



obedience to its own laws, and no others. Manifesting itself, however, in bodies having different ages, degrees of susceptibility, capacities of endurance—already laboring under a disease to which, therefore, it is superimposed—under different circumstances of atmosphere, diet, occupation, and their resultant effects—under exciting causes of a moral nature, and many latent sources of disturbance too subtle to be separately weighed and investigated—it follows that its complexion must vary according to the power of each one of these separate agencies to impress its character upon the system. But over and above, and behind all this, the disease, whatever its nature, exists as the creature of law and method, born of a sufficient cause, and capable of making an impression, whether temporary, whether chronic, upon the organism. The recognition of this great principle has led to some of the most beneficent results in the practice of the healing art. In the treatment of insanity, for example, the severance of this malady from the former idea of its demoniacal origin, has led to more rational, and consequently more successful efforts for its cure. And through this view of the disease, also, humanity has been fully vindicated, in the superior kindness and freedom from unnecessary restraint extended towards the insane. Where, in former ages, they were either turned loose to wander through an inhospitable world, or incarcerated in noisome dungeons, and cruelly loaded with fetters like so many wild beasts, because of their supposed inhabitation by evil spirits, now they are restored to the rights and privileges of their human nature;

Christian sympathy and Christian science tenderly watch over and administer to them, and thousands are in consequence healed and restored as useful members to society.

So, too, in relation to contagious or infectious diseases, experience has proved the correctness of philosophical deductions in relation to their origin and mode of propagation. They are not accidental or self-generated; they are not the result of fortuitous combinations of atoms happening at regular cycles, and between whose return they cannot exist; but on the contrary, every fact in their history tends to show that they are, and will be produced, whenever and wherever their specific germs are placed under the influence of favoring circumstances. Hence, at sea or on land, on mountain-tops or in valleys, wherever a living organism is found, the diseases to which it is liable may be produced, if only the required conditions for their development are present. And contrariwise, wherever and whenever those indispensable conditions are absent, we cannot by any agency of science or art produce a single specific disease. This is LAW—the expression of the perfection of the Creator's Universe by means of which, in a system of myriad combinations, no principle either of good or evil is freed from the obligation of subordination to a higher law than its own. Nothing, either animate or inanimate, is permitted an unrestrained exercise of its own influence; but everywhere, and to each created atom or law, some compensating and restraining agent is allied, in order, by checking superfluous activity, to preserve a general equilibrium

between the organic forces of the universe. And it is not less so in relation to disease: for it would be singular indeed, if an All-wise and beneficent Creator, having affixed laws to the motions of planets, and to the inter-planetary spaces; having legislated for the government of night and day, tides and seasons, seed-time and harvest, vegetation and animal life, in their manifold and incalculable varieties; having decreed limits to the growth, form, duration, and identity of every living thing, and made it both conservative of self and adjuvant to others—should have abandoned disease entirely to itself, removed all restrictions from it, and on it alone have bestowed the right of unlimited range, power, and continuance. Disease, like sin, is permitted to exist; but conscience and revelation on the one hand, and reason and science on the other, are the kindred means with which God has armed us against them. And it is by cultivating these means through study, observation, and practice, that we become spiritually informed and elevated in the sphere of our moral relations; or by analogy in the domain of physics, freed from that amount of disease which in former times both consumed myriads of individual victims, and shortened the average duration of human life. The benefits arising from increased attention to sanitary laws have been fully demonstrated by the increased probabilities and duration of life in this over past centuries. Thus, while in the sixteenth century the average duration of human life was only eighteen years and five months, it has now reached over thirty-nine years.

The following table will exhibit this more particularly:\*

	PROBABLE DURATION OF HUMAN LIFE.		AVERAGE DURATION OF HUMAN LIFE.	
	Years.	Months.	Years.	Months.
16th Cent.	4	9	18	5
17th do.	7	11	23	4
1st half 18th do.	27	3	32	8
2d do. " "	32	4	33	7
1801-1813	37	10	38	6
1815-1826	45	10	38	10

The labors of historians and statisticians have shown that these laws are operating with similar regularity and precision, wherever medicine flourishes, and takes part in legislation. And since the first duty which organized society owes itself is to insure the greatest measure of health and the longest term of life possible to its members, so it is under obligations to protect them against every form of preventable accident or disease.

For this purpose, the study of Hygiène, as a legitimate branch of medicine, should be more particularly inculcated upon all its practitioners. If physicians, as Plato advises, should take part in the government of a state, it is plainly for the purpose rather of preventing disease than of administering to it. State medicine differs from clinical medicine in precisely this particular, that the former being impersonal and public, forms legitimately a part of State legislation,

\* Vid. Odier et Serre Malte, Bibliothèque Univ. de Genève. Tom. 31, pp. 130-140.



and those only can be said to understand its worth, who place it of right among the civil institutions of a country.

Believing, as I do, in a law governing diseases as well as all other physical agencies, I am more than ever strongly confirmed in the opinion that it is within the power, and if within the power, then within the province, of true science to check at the threshold, many diseases which a want of this knowledge permits to run a supposed necessary and fore-ordained course. This assertion will not, I think, be disputed by those who have looked at diseases from a philosophical rather than a traditional stand-point, and have learned that the immunity enjoyed by certain persons is the expression not of diminished force in the specific disease, but of diminished concurrence of favoring circumstances for its development.\* So

\* "Typhus seems to be the fell destroyer of more lives in England than any other disease; but it has been totally annihilated in many neighborhoods by sanitary measures. At last advices, there had never occurred a single case of typhus in any one of all the improved dwellings, since they were first opened. This remark applies to all Model Lodging-Houses with which we are acquainted; and is equally true of other dwellings which have come effectually under that compulsory statute, the Common Lodging-House Act. We need not enter into extended details in proof of this point. From the mass that is before us, we will give a single instance, which is in keeping with the rest.

"Captain Hay, one of the Metropolitan Police Commissioners in London, in his return to the Secretary of State for the Home Department, for the quarter ending October 23, 1853, says that, in the houses under regulation, the lodgers numbered at least 25,000. During the quarter there had not occurred a case of fever in one of these houses; yet before they were under regulation, twenty cases of fever had been received into the London Fever Hospital, from a single house in the course of a few weeks. In the whole of the improved or model dwellings, the exemption from cholera has also been complete. In the epidemic of

far, therefore, as the concurring and necessary circumstances are under the control of human agencies, so far is it within the power of science to nullify the germs of disease. And if, as is everywhere recognised, no disease leaps full-blown into existence from an organism previously in perfect health, we must admit a period of incubation, more or less extensive, during which the system attacked has been slowly retreating before the intruding disorder, until at last all its functions are brought under the control of this morbid agency. During this time the changes induced may not constitute a matter of objective recognition, though it is the exception whenever they are not revealed to subjective consciousness, and yet this may occur in so slight a degree, as not specially to awaken the attention. Still, there generally occurs some appreciation of a sensation, either newly born, or more highly accentuated than common. The aura may not always be perceived, though it rarely fails to manifest itself in some alteration of a function, even when no distinct impression of its occurrence has been made upon the mind. It is our misfortune that these slight prefatory indications of its incubation, in the form of premonitory symptoms, are not always perceived by us, but this fact carries no weight as an argument against their existence. The inadequacy of proof often accompanying the incubative stage of a disease, is no refutation of the

1848-9, no case of cholera occurred in any of these houses, though the pestilence raged in all the districts in which they are situated, and there were instances of two, and even four deaths, in a single house, close to their very walls."—*Registrar-General's Report for 1854.*



presumption that such always exists, since there are many physical phenomena whose operations are only known by their results, nothing previously informing us what they are likely to be. The law of causation being universal in its influences upon matter, nothing is too high organically to be above its reach ; nothing too low to be beneath its applications. It is during this stage of incubation, or even previously to it, that prophylaxis finds its field of proper activity, and he will accordingly be the more philosophic physician who, studying the barometer of physical indications in the human system, earliest discovers an impending disease, or better still, a predisposition to it.

#### TEMPERAMENT.

All rational prophylaxis begins with a consideration of Temperament—a modification of organic harmony, which has not inaptly been termed the first step towards disease, for it not only modifies its predisposition, but also its development, course, and termination. Whether we choose to reject this factor in the problem of life, as an obsolete figment of ancient medicine, or to invent some convenient substitute in its stead, we cannot escape from that law of individual modification which it impresses upon every organism. Mankind, in every age of the world, and in every system of medical philosophy, have recognised this law, which even poetry and vulgar tradition have consecrated. It is no longer to be disputed, for what popular instinct has immemorially accepted cannot be wholly devoid of truth.

"Non est de nihilo quod publica fama susurrat,  
Et partem veri, fabula semper habet."

Physiology teaches us that these varieties of organic preponderance are referable primordially to those two great systems generically known as the VASCULAR and the NERVOUS. Under the shadow of the former, we have:

1. The SYSTEMIC, or SANGUINE Temperament, expressing dominant activity of the general circulation, and the function of hæmatosis.

2. The HEPATIC, expressing similar activity of the portal circulation.

3. The LYMPHATIC, revealing a like condition of glandular activity, excess in the secretion of ~~serious~~ fluids, together with atony of capillaries.

4. Blending, more or less prominently, with all these, and often controlling them in their series of phenomena, we find the dual nervous system. It is difficult, on many accounts, to accept the cerebro-spinal system as the basis of a temperament, because its position in the circle of the organic functions is one of subordination to those of vegetative life, hence its predominance over them may justly be considered a pathological condition,\* and something beyond a mere temperamental expression. And yet the correlation of the blood and nervous systems is so intimate, that they can never be entirely separated, and we are thence forced to admitting a nervous supremacy so far congenital as to constitute a quasi-temperament.†

\* Hammond's Military Hygiene, p. 88.

† Virchow: Cellular Pathology—Payan D'Aix "*Aperçu Physiologique sur les Temperamens.*" *Annales Philosoph. et Litter.* : 1843. Royer-

The nervous system may, therefore, exist either as a subordinate correlation of the organic functions in their expression of vital activities, or by over-stimulation, or congenital predisposition, constitute a generator of pathological conditions in them analogous to its own.

Temperament, then, so far constitutes predisposition, that when permitted to attain its highest possible complexion, its every tendency is to carry the organic functions into the domain of pathology. Hence, the balance of organic life can only be preserved by repressing temperamental activities, and guiding them under the compensating power of antagonistic forces. We have convenient agencies for this in all those modifiers of human life, which constitute its surroundings, as well as its supporters. Varieties of atmosphere, marine, inland, and mountain; varieties of food, animal and vegetable, to be selected according to principles of physiological chemistry; varieties of beverages, of exercise, and of occupation. Through all these means, operating physiologically, we can supply deficiencies or repress activities of the organic functions, and establish a system of checks and balances whereby no organ is unduly taxed, nor compelled for any length of time to act vicariously.

Thus, the natural history of the various temperaments may easily be traced from the domain of physiology into that of pathology and therapeutics, so as, contrariwise, to furnish us with the rationale of the prophylaxis most truly applicable to them; for we

Collard: "*Des Temperamens dans leur Rapports avec la Santé.*" Mem. de l'Acad. Royale de Medecine. Tome x., p. 168.

must never lose sight of the fact that temperament is a constant modifier of disease, as well as a predisposer to it. And in this connection, it is not too much to assert, that it lies at the foundation of most chronic diseases, an ignorance of which fact will often nullify therapeutic agents addressed only to the more immediate and apparently disturbing causes of functional harmony. Overlooking the reflex functions of the spinal cord, or the reflex excitability of the ganglionic nervous system, and addressing treatment locally to that organ most demonstrative of suffering, is the great quicksand upon which medical practice is constantly shipwrecking itself. It is mistaking a symptom for a disease, and in silencing it we too often, alas! silence the watchman whose voice in the night-time gives us warning of an existing conflagration. The following synopsis will illustrate the law which I am attempting to unfold :

#### SANGUINE TEMPERAMENT.

*Association.*—Lymphatic-sanguine ; nervous-sanguine ; bilious-sanguine.

*Physiology.*—Dominant activity of the circulation in all its organs, indicated by full character of the pulse, and amount of carbonic acid and urea eliminated.

*Morbid Tendencies.*—Predisposition to congestions ; adhesive inflammation ; plethora ; hæmorrhages ; diseases of the organs of circulation, and critical profluvia. In general, to acute febrile diseases, with, how-



ever, great recuperative ability, manifested by rapid convalescence.

All authors have recognised *plethora* as the chief and pregnant source of danger in the sanguine temperament, towards which there is a constant morbid imminence.\* And it is more generally constitutional than acquired, since, unlike its opposite, anæmia, it cannot be readily induced.† It does not, therefore, depend exclusively upon food or deficiency of exercise, and its tendency can only be modified by these, but not eliminated.

*Prophylaxis.*—This should tend to increase interstitial metamorphosis by an active out-door life, with some mental occupation ; temperate amount of sleep ; avoidance of high seasonings and of nitrogenized food, particularly game and oily fish, in excess over vegetable, and among these selecting the sapid and mucilaginous in preference to the starchy or aromatic ; abstinence from distilled or fermented beverages, except perhaps such acid wines as are particularly diuretic ; partaking of warm infusions, like tea and coffee, which promote excretion by the skin and kidney, and avoiding all tendency to constipation.

\* Ergo si plenior aliquis et speciosior, et coloratio factus est, *suspecta habere bona sua debet* ; quæ quia neque in eodem habitu subsistere neque ultra progredi possunt fere retro quasi ruina quadam revolvuntur.—Celsus, lib. 2., cap. 2.

† La pléthore semble dépendre d'une constitution primordiale du sang, qu'il ne nous est pas donné de produire aussi facilement que nous produisons l'anémie ; ce qui veut dire en d'autres termes qu'il est beaucoup plus en notre pouvoir d'appauvrir le sang, que d'en accroître la richesse.—Andral : *Essai d'Hématologie Pathologique*, p. 41.

*Therapeutics.*—This temperament bears well blood-letting, saline, and hydragogue cathartics, diuretics, mercurials, the alkaline carbonates, diaphoretics, and alteratives, and non-astringent bitters. Saline spring waters and cold baths are also well borne.

Contra-indicated, are emetics, mineral tonics, and astringents; opium, and its preparations.

#### HEPATIC TEMPERAMENT.

*Association.*—Bilious-sanguine.

*Physiology.*—Dominant activity of the portal circulation, accompanied by sallowness of the skin; sharp, hard, elastic pulse; rapidity of digestion; great powers of application and concentration upon mental subjects, or of physical endurance and perseverance. This temperament is more common among men than women.

*Morbid Tendencies.*—Predisposition to habitual constipation; to hæmorrhoids and congestions of the abdominal venous circulation, or fluxes; to fevers of a malignant type; to inactivity of the emunctories, and relative paucity of excretions. Morbid mental phenomena are very commonly developed by this temperament; thus, melancholia, hypochondriasis, and mania, are not unfrequently found connected with it. In a physical point of view it is the superior of the nervous-sanguine, since it gives sensibility united to endurance, while the former gives sensibility with force, but that only ephemeral and unenduring.



*Prophylaxis.*—This should tend to increase activity of the skin and bowels, by rendering the circulation less concentric and more peripheral ; by outdoor exercise, involving succussion ; by avoidance of sedentary occupations, exciting passions, and long sustained mental efforts ; by refraining from spices and too concentrated or highly seasoned aliments, and incorporating in the diet watery, rather than starchy vegetables ; by excluding alcohol or its combinations from use, and avoiding generally, excess of fat, or sugar, in food or drink. Tea, coffee, and water, are the only habitual beverages, and the bitter principle in salads seems also of use, as a special stimulant to it.

*Therapeutics.*—Like the sanguine temperament the hepatic bears well diaphoretics, diuretics, and saline cathartics, though drastics seem only to increase its tendency to constipation, and on this account they should not be habitually employed. It bears well, also, mercurials and alteratives, and bitter, non-astringent tonics. The mineral acids and narcotics are also generally acceptable. Emetics are not contraindicated, and cold bathing is also tolerated.

#### LYMPHATIC TEMPERAMENT.

*Association.*—Lymphatic-sanguine ; Nervous-lymphatic.

*Physiology.*—Feebleness of circulation, indicated by a slow, soft, yielding pulse ; laxity of the muscular fibres ; pallor of complexion ; softness and smoothness

of the skin ; prominence and apparent dilatation of the veins of the extremities ; increase of the serous fluids, giving plumpness of outline with flaccidity of tissue ; great activity of the absorbents beyond that of the secernents.

*Morbid Tendencies.*—Predisposition to anæmia ; to all varieties of struma ; to diseases of bones ; to a catarrhal diathesis, with mucous fluxes from the head, the chest, or the bowels ; to passive congestions with serous extravasations ; to enlargement of the tonsils and other glands, to obesity, and to that whole train of obscure cellular changes which expresses itself in chronic diseases or a cachectic habit. This temperament is, in fact, universally recognised as a pathological condition of the organs of vegetative life, and represents, as to them, the negative pole of physical activity, while the sanguine temperament represents the positive.

*Prophylaxis.*—Change of air from a moist or marine atmosphere to an upland and dry one ; increased exposure to sunlight and fresh air, with active exercise therein ; awakening activity in the skin and favoring cutaneous exhalation by woollen clothing worn throughout the year, and avoidance of sedentary occupations. Food should be of a stimulating as well as generous character ; and spices, and even fermented drinks in moderation, may be usefully employed. Milk, farinaceous and mucilaginous aliments, are to be avoided, and in their stead, albuminoid substances should be preferred. Less of fluids

and more of solid substances should constitute the dietary. Hence, sloppy food, watery vegetables, or even large potations of water, are contra-indicated. The diet, in fact, should be as dry as is consistent with comfort.

*Therapeutics.*—The whole series of tendencies being towards cachexy, no remedies which are in the nature of debilitants are well borne by this temperament. Hence, unless combined with tonics, opiates, or astringents, drastic or saline cathartics are to be avoided; also active mercurials, and antimonials. But mild purgatives with aromatics mineral tonics, particularly iron; alteratives, and astringent bitters almost are always acceptable, and productive of good.

#### NERVOUS TEMPERAMENT.

*Association.*—Lymphatic-nervous and nervous-sanguine.

*Physiology.*—Spare habit of body, with slight muscular development; pallor of complexion; pulse rapid but weak; great elasticity of nature, with slight powers of endurance; erethism of the nervous centres manifested by extreme sensibility; light slumbers and facility of exhaustion. Digestion is usually languid; there is great sensitiveness of the skin to external impressions, with activity of the kidneys; acuteness of sympathy between distant organs; and rapidity of mental action, with versatility, is also a characteristic.

*Morbid Tendencies.*—Predisposition to all forms of reflex excitability; to insomnia; atonic dyspepsia; hypochondriasis; hysteria; convulsive diseases, and irritability of the gastric and intestinal mucous membrane; to mania and paralysis. In a word, there is a constant hyperæsthesia of the nervous system radiating through the electrical sympathies of this temperament, its influences upon distant organs. The co-næsthesia is easily disturbed, and nervous oscillations continue to agitate its subjects long after the exciting cause has been removed.

*Prophylaxis.*—It is only by an increased development of the muscular system that we can silence the abnormal sensibilities, and undue prominence of the nervous centres. An out-door life, with varied mental occupation; active daily exercise, up to the full point of tolerance; field-sports or gymnastics, and horseback riding, will do more, than aught else can, to subordinate the nervous to the muscular system. In addition to this, the diet should be generous, but non-stimulating; easily digested meats, and soups or fish; succulent and starchy vegetables; bread made with coarse flour\*; small-beer, or ale; tea and coffee in moderate quantities, and of little strength; milk or chocolate, form the proper dietary for this temperature.

*Therapeutics.*—Drastic cathartics or diuretics are not well borne; saline purges even, will, at times,

\* Vide "*Physiological and Dietetic Properties of Phosphorus*," by John H. Griscom, M.D., in Trans. Am. Med. Assoc. for 1864.



lower the pulse and act as debilitants. But warm, aromatic purgatives, mineral tonics, particularly iron, phosphorus, and zinc, and simple bitters, narcotics, and diaphoretics ; also, light, dry wines, are generally acceptable, and act favorably.

These diversities of temperament, pointing out as they do latent tendencies in organs, explain the causes of many diseases, particularly those of a chronic form ; for they serve to show that disease is often but the expression of an extreme physiological condition, which differs from health only in degree of activity !\* A knowledge of these laws of organic force will serve to remind us that every extreme manifestation constitutes, not simply a tendency, but is already a condition of morbid imminence, in which each fresh increment of activity, or each retrogression from a normal rhythm, is a step in the domain of pathology. In this way, slow, organic changes may imperceptibly go on, until the character of a function becomes radically perverted ; and we are then summoned, perhaps for the first time, to consider a state of advanced disease, which had never previously announced itself by any loud or demonstrative symptoms.† And yet if we analyze its history, by penetrating into the antecedent conditions of its subject, we shall rarely fail to find one or more temperamental starting-points, deemed innocent of any complicity in its production,

\* Dumas "*Doctrine des Maladies Chroniques*," tom. 2, p. 157.

† The *Excrementitious Plethora* of Dr. Barlow ; the *Pre-tubercular Stage of Phthisis* of Dr. E. Smith ; the *Psychologie Morbide* of Dr. Moreau ; etc., etc., are all illustrations of this law of insidious invasion.

because constituting the usual habit of life of the patient. Now, this is precisely the point where the earliest deviation from health began; and as nature works as thoroughly in the least as in the greatest of her manifestations, so the law of cause and effect operates equally everywhere. *Susquam magis, quam in minimis tota est natura.\** Therefore is it, that, to repress these temperamental tendencies constitutes the first chapter in the philosophy of prophylaxis, and to ignore them is to ignore the application of physiological laws to individual organisms. Under any aspect of pathology, a predisposing cause must always take precedence of an exciting one; and this law, recognized by philosophers in every age, has acquired an almost axiomatic character by the repeated confirmations which modern science has given it. By a more rigid observance of its teachings, many diseases become, if not wholly preventable, at least greatly controllable, and thus much less fatal in their consequences. And in support of this theory it is only necessary to adduce those so-called hereditary diseases, whose predisposition, if not eradicable, can at least be kept slumbering through life; or, when manifesting themselves, are reduced to the mildest and most benign form. Mania, epilepsy, gout, scrofula, cancer, etc., are significant illustrations of this law, and however diverse may be their physiognomy, their incubation and development are always greatly intensified or hastened by temperamental tendencies.†

\* Pliny: *Hist. Nat.*, lib 2, cap. 2.

† *Morbos hosce, ut dissimili facie in publicum prodeuntes, eadem de stirpe natos eodem quoque pabulo cnutriri, eadem ubique therapeutica*



## CLIMATE.

Next to temperament, climate is the strongest modifier of organic functions, and the most direct source whence pathological conditions are engendered. Hot, cold, dry, and moist; or tropical, temperate and boreal, mountain and marine, each in its extreme expression, develops special physiological conditions in the organs of vegetative life. The alternations of the seasons were intended, therefore, to afford repose to all the great organs, each of which has in turn assumed a dominant activity, and performed a double share of duty under the special stimulus of temperature. Thus the liver and skin, in summer, relieve the lungs and kidney which, in winter, had relieved them; and between the extreme range of those two seasons various organs mutually excretory, rise and fall in activity, according to latent tendencies developing peculiar degrees of sensibility. Spring and autumn, as transitional seasons, are more absolutely irritating to sensitive organs than either mid-winter or mid-summer, and this from the fact that they alternate rudely from one extreme of temperature to another, and test severely the elasticity of organs and their powers of reaction. Judging from the analogy of the fauna or flora, man is not, physiologically speaking, a cosmopolite, but has his own proper habitat, for which the anatomical proportions and physiological harmonies of his organs best fit him.

*methodus, et eodem cum eventu adhibita, demonstravit. (Stoll, Rat. Med., p. 82.)*

This is particularly well illustrated in the history of various races typically dissimilar.\* But aside from this, and even in the same race, diverse forms of deterioration are seen to follow distant removals from the sphere of ancestral nativity and residence. The first wave of Anglo-Saxon emigration always exhibits some depreciation in physical stamina by transportation to this continent; its progeny is less positively developed, has less physical stamina, and seems to be under the constant ban of climatic antagonism, since, whenever returned to its original home, it re-assumes the national tendencies of its parents.

The deteriorating influences of climate are best seen upon masses of men, as in the case of European troops transported to the tropics; or, after several generations, among those in civil life. While on the other hand, the therapeutic virtues of climate, being generally observed only in individual cases, and remembered as a striking example of benefit, are not predicable in favor of whole races. I doubt, in fact, whether the history of the world exhibits a single instance of a race of men being improved by transportation to a foreign clime. On the other hand

\* From a large number of autopsies of negro soldiers made during our late Civil War, it was definitively proved that the anatomical development of organs originally intended to subserve the wants of a tropical climate, has not in the least been changed by long residence in a different region; and that consequently, the large mortality of the unmixed negro race in temperate and northern zones is the simple result of a change of habitat without corresponding change in the organs of vegetative life. Thus the brain, lungs, and spleen, were invariably found to be smaller than in the white race, while the liver particularly, and intestinal canal generally, were found to be much larger.

numerous instances prove the contrary. The northern nations which invaded the Roman Empire; the Asiatic Turks who invaded Europe; the Spaniards in South America; or the English, French, and Irish in North America; and the negro race in Canada, all show positive signs of having encountered a climatic influence tending to their deterioration. The Esquimaux race transplanted to our latitude, would soon succumb to the cumulative influences of climate despite any form of dietary they might adopt, precisely as Dr. Kane's men all tended to develop scrofula in the Arctic regions, in the face of the best sanitary precautions they could employ. And if this deterioration was so soon manifested in them, how would it have been with future offspring, had they brought American wives and colonized there? Would the children have inherited more vitality than their parents possessed? Or would they ultimately become transformed into Esquimaux? Since neither of these things could happen, it is fair to infer that such a colony would not survive a third generation. Therefore is it that the recognised benefit of climate to certain individuals, like that derived from special articles of food, proves only its adaptation to personal conditions existing in them, and not to the race in general to which they belong.

If such be the influences of climate, that it not only develops tendencies, but increases them when already existing, it follows that its correlations to temperament must be of the closest and most significant character. That it may originally have been the father of temperament in a less locomotive age of

the world, is beyond question. That it is so now cannot be equally admitted. How far, therefore, many systems, in which lurking tendencies to disease may be manifesting themselves, and where no exaggerations of temperament will alone explain them—how far such systems may be suffering from the want of harmony between their organs and the qualities of the surrounding atmosphere, should always constitute an element of inquiry with the philosophical practitioner. In therapeutics we speak in general terms of the beneficial effects of change of air, pointing to such diseases as asthma, whooping-cough, catarrh, phthisis, etc., etc., in proof thereof. But we have hosts of sickly children, with weak, flabby membranes, tending to excessive generation of mucus, and atonic glands but half performing their elaborating function ; we have weak, nervous women, of characteristic pallor, mere stalks of human celery, in whom furs and furnaces can scarcely maintain the rhythm of a languid circulation ; we have legions of invalids whose sources of disease, often obscure and undiscovered, are all referable to a common debility in the function of innervation, who would often be better remedied by change of air, than by those most convenient charmers, *Alteratives*. Variety in food is not a simple act of condescension to the palate, but a recognition of those organic necessities which require to be separately gratified. And, inasmuch as, within the circle of this law, certain temperaments require a larger proportion of particular aliments, some demanding excess of animal over vegetable food, and *vice versa*, in order to continue in positive health, so



the experience of all ages shows that certain conditions of atmosphere are, like food, either acceptable and thus benign to one class of beings, or a source of irritation, and thus injurious to another. While change and variety in diet are constantly insisted upon as essential pre-requisites to health, change of air is only thought of in the presence of actual disease, and the great fact is lost sight of that the atmosphere may have been the first, last, and most constant cause in the production of the disease itself, to which state it has slowly dragged the system down, by a series of functional derangements expressing only excess in physiological activity. No better illustration of this law exists, than that afforded by the chronic pallor and tendency to struma in childhood, which afflicts the permanent residents of great cities, particularly where manufacturing arts taint the general atmosphere; or, better still, the characteristic complexion of the inhabitants of malarious regions, whose whole economy reveals the presence of an atmospheric poison constantly disturbing the balance between the nervous and circulating systems. To such persons medicine is practically only palliative, since the active cause continues always in advance of medication, and no system of prophylaxis, however rigidly pursued, will insure perpetual immunity against so subtle an agent as the atmosphere.

It becomes important, therefore, as an element of prophylaxis, that the quality of the atmosphere should be related to the wants of the system as manifested by its temperament, and temperament is in turn greatly modified by age. Thus, childhood requires a



dry, pure, bracing air to stimulate the glandular system, and repress the tendency to extreme sensibility of the mucous membranes and cerebro-spinal system, while old age requires the opposite. In this respect, women closely resemble children, and the same rules apply to them. In middle life, and when temperamental physiognomy is more clearly indicated, the wants of each system can readily be inferred from the character of its functions, and the predispositions to disease which they exhibit. The seasons, by their change, give us a change in the temperature and relative moisture of the air; but they do not affect, in a similar way, the pressure of the atmosphere in a given locality. This remains a more constant quantity in the problem of physical life, and one whose influence has until recently been greatly overlooked. All are equally influenced by it, even though not equally sensible of it. The first step in relieving the system from this incubus consists in occasionally exchanging climates, by passing from a moist to a dry atmosphere, from a marine to a mountain climate, or contrariwise. And the sojourn there should be sufficiently prolonged to make a very definite impression upon all the organic functions. Merely flitting in a railway carriage through a country does not bring us under the specific influences of its climate, unless it be a particularly sinister one. In order to be benefited radically by a change of air, we must tarry long enough in it to effect a change in the molecular constitution of organs.\* Nothing short of this will

\* Taking the combined weight of all the excreta as a gross expression of the daily waste of the body, and dividing the entire weight of the

suffice to eliminate latent morbid tendencies, or secure absolute relief from a confirmed source of functional disturbance. And the more we investigate the causes of chronic diseases, the more we shall find them depending as much upon atmospheric agencies acting silently but constantly, as upon special habits of life.\* The question in every case must finally resolve itself into this, viz.: whether the climate be, or not, suited to the individual constitution; because, if not, it is vain to expect continuance of health. No organism can resist the antagonism of the imponderable agents, particularly when aided by allies within it.

In connection with climate, also must be considered those seasonal changes, which act both as exciting causes of disease, as well as predisposing ones, by repetition. Hence, while a simple exaggeration of seasonal conditions might excite disease chiefly in the weak and invalid, a cycle of seasons of unusual temperature would finally tend to lower the vital powers of even the strongest, and so create an epidemic constitution in all.† The doctrine of cumulative influences is, perhaps, one of the most neglected chapters in General Pathology; and yet, if correctly studied, it may be made of lasting importance, as one of the bases of prophylaxis. We know, for example, that a European cannot long reside in the tropics without incurring an attack of endemic fever, or suffering from

latter by this sum, we can deduce the time *approximately* of a complete reconstruction of the body by metamorphosis of its particles.

\* Dr. Henry J. Bowditch, of Boston, has well shown this in a monograph entitled, *On Consumption in New England*.—Boston, 1862.

† See *Cyclical Changes*, by Dr. E. Smith, London, 1861, p. 356.

derangements of the liver. He may escape both during the first year, or, perhaps, even the second, but very few escape the third season. Now, during all this time, is it rational to believe that the seasons have suspended their influence in his behalf? Or, has not the system rather been slowly succumbing before the cumulative influences of climate until its limit of tolerance has been reached? If every foreigner could be transported home at the end of a year, and rehabilitated physically, why might he not perpetually escape this point of saturation? The inhabitants of the plains in India fly to the mountains during the summer months; our Southern fellow citizens come North likewise to escape the malignant fevers of their own homes; and all see and approve of the wisdom of this course. But, inside of such potent necessities for removal from notoriously unhealthy localities, there are silent, insidious causes at work in every climate, which, in relation to particular organisms, are as surely fatal in tendency as the most malignant of acute diseases. This law explains to us the disadvantage under which all medical treatment labors, when addressed *in situ* to diseases born of special local causes and how difficult it is to rally powers that have long been paralyzed; it also shows why the mortality among the poor, from no worse diseases than a better-conditioned class may at the same time be suffering, must always be greater. It is plain that climate acting upon temperaments, and habits of living superadded to these, serve to determine the type which disease assumes in any organism; and if so, then by altering these modifying agencies, we can

greatly mollify the activity of diseases. The type of fever which a sanguine or nervous temperament would develop in Naples or Rome, would be far different from the same disease occurring to the same person in London or Edinburgh. In undertaking to prevent disease, by anticipating and mollifying its predisposing or active causes, we shall find it important to omit none of the agencies, whether inside or out of the body, which I have enumerated.

Another point which offers itself to our notice in this connection, relates to that large class of nervous disorders which are most despotically influenced by the great law of periodicity. This law, which governs all physical nature, bears with peculiar emphasis upon the function of innervation. As all the phenomena of the universe obey its commands, so our instincts, desires, necessities, and diseases, fall within the limits of its orbit, and circulate about its common centre. The doctrine of habit has its foundation here, and by observation of the periodic recurrence of cycles, we can prepare the system to meet, and successfully resist the return of morbid conditions. We easily recognize this rule of physical conduct in intermittent fever, but shall we stop here or search for it also in neuralgia, gout, hay-asthma, epilepsy, mania, &c.? Shall we not find it operating in all the great functions of evolution, in childhood, manhood, and old age, and by its study can we not often repress the tendency towards functional derangements at inopportune moments? How much of disease occurring in childhood, or during pregnancy, or after surgical operations, might not be prevented



by a constant appreciation of the inexorable laws of temperament, climate, season, and periodicity? For the seasons may be made prophylactic agents either by awaiting their return, or going in search of them in foreign parts; temperamental tendencies may be essentially controlled and kept within healthy limits, and the law of periodicity may be stripped of many of its terrors, by the experience of our ability to interrupt its operations, so that debilitating crises of all kinds may be foreseen and prevented. Under this, not altogether theoretical view of the laws of health and disease, there seems to be no good reason why we may not confidently look forward to a time, when we shall think him the greater philosopher, who causes nature to balance her own operations in the human system by the harmony of relation between them, whereby each part being spared the performance of double duty, or the necessity of superfluous friction, may be consumed consentaneously with the rest, and the cycle of life may cease to be abridged by those multiform causes which, partly born of human agency, can most certainly, to that extent, be controlled by it; for increasing experience proves the truism of Seneca: *Non accepimus vitam brevem, sed fecimus.*

#### DIET.

The positive relations between food and the wants of the human economy are well understood, physiologically. And when disease has essentially modified the processes of constructive assimilation, we



seek determinately to reëstablish nutrition by special alimentary substances. But before even the actual invasion of disease, conditions of the system are engendered by causes susceptible of being referred to no other agency than food. A recent author, Dr. Chambers,\* with true philosophical acumen, has pointed out that the essential cause of disease consists, in a majority of instances, in an excess of destructive over constructive assimilation; and he proves his allegation by a course of treatment specially intended to reëstablish harmony between these two processes. It cannot be too strongly emphasized, that the influences of diet are as cumulative as those of climate, and may tend to produce disease as well as prevent it. Whence it comes that the diet of mothers tells upon the health of children, that of childhood upon the vigor of manhood, and that of manhood upon old age. The call for variety in aliments is not simply æsthetic or artificial, but expresses an actual want of the system to meet daily contingencies in the function of interstitial metamorphosis; and a neglect to gratify this instinctive admonition, if persisted in, inevitably results in disease. Exclusivism in diet, which is intemperance in fact, produces ill effects upon all who practise it. Of these we have notable example in the *tea-and-toast* anæmia of poor sewing-women—in the *pellagra* of the Lombard peasant—the *pinta* of Mexico, or *la carate* of Bolivia, all produced by feeding exclusively on maize.† The influence of a rice diet in India, upon

\* Chambers: *Renewal of Life*.

† Morel: *Degenerescences de l'Espèce Humaine*, p. 574.

the native population, has also exhibited itself by a tendency to diseases of the most malignant type. The fact plainly reveals itself, that exclusivism of diet, which may be borne in disease, as being essentially curative (*In alimentum, pharmacum optimum*,—Galen), is antagonistic to health, when established ; and if studied in its influences upon communities, will often explain tendencies to physical degeneration, for which no other demonstrable cause exists. It is not sufficient to say that climate, or the national cereal, should alone determine the dietary of a people. For people differ everywhere individually, and each individual organism requires adjuncts to nutrition peculiar to itself.

Beginning with childhood, the law of food should be applied so as to meet

- 1st. The Wants of the Temperament.\*
- 2d. The Wants of the Climate or Season.
- 3d. The Wants of the Taste.

In adult life questions of Occupation and of Taste may somewhat complicate this problem, but the order of its solution need not vary on that account. Temperament, first of all things, should be considered, for temperament is the portable climate of each individual, from whose influences he can never escape, in-door or out, summer or winter. He may incase himself in furs and escape the nipping air of the arctic zone ; he may bury himself in bosky groves in the tropics, and so escape the parching

\* Zeminormann : *De l'Expérience en Médecine*.

*Communicated*

heat; he may dwell in any form of artificial atmosphere which he chooses to create; but with all these adjuncts he only modifies his external conditions. His temperament and its wants ever remain the same in quality, if not degree, and the balance of health can only be preserved by regulating his food accordingly.

#### SEPTICÆMIC AND ZYMOTIC DISEASES.

But it is chiefly in that class of diseases ascribed now to a septicæmic, and now to a zymotic origin, that the value of prophylaxis becomes incalculable. These diseases are often, at their inception, of difficult diagnosis. They are the offspring of causes wholly organic on one side, and only partially so upon another. In the most extreme form of their development, some pass beyond the boundary of a true disease, having cyclical periods, and obeying a law of definite duration, and exhibit the character of a cumulative poison, emphatic, swift, and destructive in action, from its earliest manifestation. In septicæmic diseases, in particular, the early symptoms are variable, generally uncharacteristic of their specific nature, and resemble those of many varieties of febrile affections. Their true character is apt to be masked until the system is completely controlled by their disorganizing influences; and its curative reactions, when manifested, are too often incomplete and abortive. Hence their prognosis is usually uncertain, and as often unfavorable. They constitute the true opprobria of medical practice, yet, philosophically speak-

ing, not more so than do any organic diseases when passed into their more advanced stages. Their successful treatment will depend, therefore, upon their early diagnosis, which becomes, in fact, the crucial point in the problem.

It may be said of them, at the outset, that, in common with all diseases involving changes in the constitution of the blood, their violence is in proportion to the period of their incubation;\* for, whether we entirely accept the humoral pathology or not, we do not yet know of any agency in the human system which so directly and universally influences the balance between the organic functions, as the blood. It is true, doubtless, that the nerves have their appropriate part to play in regulating the harmony of functions—standing sentinel at points of exposure, or transmitting messages between contiguous or distant organs, so as to *regulate* their synchronous action. But before these regulators and messengers can act, there must be organs and functions on which to exercise their duties. In the genesis of the body the blood unquestionably takes precedence of all other constituent portions, and this priority in creation imparts to it a priority in influence which always renders it, not only the *fons et origo*, but also the *primum mobile* of life. A limb may be completely paralyzed, and though atrophied, will still live; but

\* The death of our lamented Fellow, the late Professor D. S. Conant, of the University of Vermont, affords a striking illustration of the virulence of septicæmic influences, when permitted to act cumulatively, and thus thoroughly to saturate the system with their toxic qualities.



cut off the circulation from it completely, and it inevitably dies.

We must look unquestionably to the blood as the receptacle of septicæmic influences and zymotic germs, and the nidus for the specific reproduction of the latter. It is here that they are first received, imbibed, and commence their mission of development or disorganization. It is vain, therefore, to attempt to combat their influences locally, while the infected blood behind continues to pour a tainted stream throughout the body. All the world knows, for example, that the carbuncular or erysipelatous diathesis cannot be eliminated by poultices or external applications alone; but that, on the contrary, these means, whenever they do not prove abortive, are always found of subordinate importance and influence, as compared with internal remedies acting necessarily in and upon the blood, and without whose co-operation the former became only palliative and ephemeral. The vulgar saying, that in order to escape disease we must live above it, and that debility is an invitation to its attacks, is true physiologically; only, it fails to recognise the fact that debility, manifesting itself by a sense of persistent lassitude and general discomfort, is often the first stage of an existing disease, and the earliest note of warning given that the citadel of life is being undermined. Whenever such a condition is experienced without an *immediate* adequate cause, and wherever it continues to increase in the midst of repose or warmth, with headache superadded, and loss of appetite, it is justifiable to infer the presence of a disturbing cause in the blood. And if the sub-



ject has been exposed to either septicæmic or zymotic influences, we are authorized to consider them as the source of morbid disturbance. Certainly it is safer to do so in any event, for should the diagnosis be faulty, it will not diminish the chances of recovery from any less malignant diseases; and if it turns out that we are right, the probabilities of saving the patient's life, by antagonizing the disease at this stage of its existence, are increased an hundred-fold.

Fortunately for mankind, the sleepless science of chemistry, walking arm-in-arm with physiology and pathology, and lending her aid to both, has probed the storehouse of Nature, and evolved an agent competent, as hundreds of experiments have proved, to neutralize zymotic germs in the blood. This discovery, which bids fair to be ranked as the foremost of the century, is the result of the unfolding and reducing into scientific problems, of conjectures floating theoretically in the mind of every age, and transmitted as another seed-thought from past centuries to our own. From time immemorial, sulphur, *το θειον* or Divine of the Greeks, as it was called, has been credited with the possession of detergent and prophylactic properties. As a purifying agent, it was largely employed in antiquity, and is frequently mentioned by Homer, \* Pliny, † and Dioscorides. ‡ Used in sacrifices and lustrations, it came to be universally known as a substance of inestimable value, and in every

\* *Odyssey*, x. 481; *Juvenal*, *Sat.* 2, 157.

† Pliny: *Hist. Nat.*, 35, 50.

‡ Dioscorides: lib. 5, 124; Moore's *Hist. Anc. Metals*, p. 48.

age it has been either vaunted beyond measure, or placed among articles of a secondary importance in therapeutics. Its chemical combinations being unknown to the ancients, it was with them only a simple elementary substance, of various kinds. It was left to the researches of modern chemistry to discover its manifold combinations with the metals and the alkalis, its affinities for the gases, and its special anti-zymotic properties.

Acting upon the very reasonable presumption that in zymotic diseases there is evidence of an organic germ causing a process of true fermentation in the blood, since this latter cannot incorporate into its constitution elements that are foreign to it, a number of philosophical minds undertook to solve the problem by the inductions of experiment.\* It is unnecessary to repeat the history of these experiments here; they are too well known by this time to need more than a passing allusion, and it is with their results alone that we are concerned. These results show that not only in laboratory experiments upon animals, but also in the treatment of the rinderpest, in England last year, the *alkaline sulphites* proved a certain and reliable prophylactic against its infection.† They have also been used with great benefit in typhoid fever in our own country, and even in the treatment of cholera abroad‡, both which diseases they showed themselves able to control,

\* Vide: *Treatment of Zymotic Diseases by the Alkaline Sulphites*, by Dr. De Ricci, Braithwaite's Retrospect for January, 1866, p. 17.

† Vide: *Disinfectants*, North British Review, June, 1866, p. 245.

‡ Vide: *Sansom on Cholera*, p. 47.

when already fully developed. Had they been administered in anticipation of their attacks, and as prophylactics, there seems little reason to doubt that they might have proved equally efficacious. At all events, the experiments made by Prof. Polli and Dr. De Ricci, prove them to be incontestably prophylactics in zymotic poisoning. They have placed these results before the world for their criticism and adoption, and it is clearly the duty of all to verify them wherever and whenever the opportunity is presented. Should it be ultimately demonstrated that the alkaline sulphites can neutralize zymotic germs in the blood by a specific action upon them, it will then be permitted man to control this class of diseases with as much facility as he now controls variola. Under this newly-descended blessing to mortals, we can shout hosannas to the Deity, while assigning to the discoverers of this benign law places alongside of Harvey, Jenner, and Morton.

## STATE MEDICINE.

But this law of organic supremacy which furnishes its own checks and balances, and acts with so much conservative or disruptive force upon individuals, according as they increase or repress its tendencies, operates with increasing force upon masses of men to intensify all the causes of disease. "The breath of man," says Rousseau, "is fatal to his brother man," and the very spirit of gregariousness which underlies all social organization, becomes in its highest expres-

sion the most frequent source of danger to communities. Hence broods of diseases, and those forms of house leprosy (*lepra domorum*), typhus, typhoid, cholera, diphtheria, which cling to the walls of houses, transmit their morbid germs to every succeeding generation of tenants, and so reproduce themselves *ad infinitum*. Hence also, by over-crowding, as in the tenement houses of the poor, not only de-vitalization of the air occurs, but it becomes supersaturated with organic emanations, themselves acting as ferments to originate disease, to quicken latent tendencies, or to abridge directly the vital forces, so that the limit of infantile life is curtailed with despotic nicety to less than a year in one-half of all that are born; a general cachexy pervades the household; scrofula, in its myriad forms; cutaneous diseases and affections of the eyes, with deformities of the bony system; tortuousness of veins, and weakness of the limbs and intellect, all combine to form the physiognomy of these martyrs to ignorance and social misgovernment.\* This population, in every age of the civilized world, has been justly considered as a dangerous class, both to public health as well as morals; and wherever science has been permitted to enlighten legislation, some efforts have always been made to provide *medical* relief for the poor. Recognising the fact that in crowded communities, disease once engendered, may, like a conflagration, spread indefinitely, society has always felt and recognised the necessity

\* Chaque population porte l'empreinte des lieux qu'elle habite; elle est ce que la font sa race et le milieu auquel elle s'est adaptée. Lévy : *Hygiène*, tom. ii., p. 511.



of administering medical assistance gratuitously to the poor, as well from motives of 'self-protection as from charity. Thus in Greece, more particularly, and among a people keenly astute in all the requirements of practical legislation, the creation of State Physicians was a compliance with this necessity ; and Rome, borrowing all of her philosophical light from the East, repeated the same act of wisdom in her *Archiatri Populares*. This incorporation of the Esculapian element in legislation, as essential to its completeness, being the fruit of an advanced civilization, does not usually appear until late in the history of governments. Even with the foregoing evidence of past experience before them, the Western nations of Europe have been slow to adopt codes of medical police ; and long even after that revival of letters which burst upon the mediæval world, like the dawn of a new creation, the public health was left to the chance care of benevolent physicians, who, in connection with monks, were expected to treat epidemic diseases as often by exorcism as by medicine.

To anticipate preventable diseases by removing their causes, seems to have formed little if any part of the philosophy of past legislation. It was thought time enough to consider disease when it actually occurred ; and the tendency to look upon it as essentially of spiritual origin, necessarily limited the sphere of man's permitted investigation into its efficient causes. Hence, it became in some sense blasphemous to assert that it might, under Providence, be controlled by human interference, and that physical efforts could essentially modify its spread. And in relation



to epidemics, in particular, evidence of the loosest kind—so loose, in fact, that in any court of justice it would be scouted as the veriest hearsay-evidence of this kind, made up of old wives' stories, popular conceits, superstitious notions, fossil traditions, monkish demonologies, and pagan pantheism—has been received with respect, even by the learned, and permitted to have weight in determining their judgments. The disposition to blame the Deity for the sins committed by His creatures, whether in the world of matter or of mind, is only a convenient plea for human irresponsibility, and therefore a shield between wrong and its penalties. So in physics, the disposition to blame the atmosphere, that efficient source of life to both animals and vegetables, ever fresh, fluent, and conservative, a nonrisher of all, the best cleanser, purifier, and disinfectant, the *primum mobile*, in a word, of all organic existence—the disposition to blame this beneficial source of life and health, for diseases whose increased prevalence brings them within the category of epidemics, is also only a convenient excuse for human ignorance or sophistry. It is, moreover, singular how long these traditional forms of belief have fettered the human mind, in other departments at least, progressing with unceasing activity, while exacting at the same time logical proofs for every new principle it unfolds. Here it seems to have folded its pinions, and lulled itself to sleep in the arms of a mediæval obscurity.

But, the terrible voice of epidemics sweeping like conflagrations through communities, and the evidence that they may become domiciliated and ende-

mic\* by neglect to extirpate their seeds, has sounded an alarm throughout the world, which is likely to produce a great reform in legislation, by the introduction of a corner-stone of sanitary science. Mankind have received some terrible lessons of wisdom in the fearful epidemics of the Middle Ages. Whole communities swept away, society convulsed in all its departments, agriculture and the arts paralyzed, and the human race apparently on the verge of extermination, by the recurring visits of these fell destroyers. Yet in the face of all these suggestive admonitions of some personal responsibility on the part of communities for these consecutive visitations—where, as in the case of one disease in particular,† the nations of one country *yes* alone suffered, whether at home or abroad; in the face of all these emphatic suggestions to *look down and among themselves for local causes of disease rather than up and in the atmosphere*, modern nations have only recently recognised the fact that all epidemics are not of atmospheric origin, and those of most persistent duration and ineradicable character, known as zymotic, are essentially *non-atmospheric*, having in every case, for origin, organic germs, and not being in any sense *prolem sine matre creatam*, or the offspring of spontaneous generation.

The inherited tradition accepted even by many

\* This fact was noticed as early as the contests of the Romans and Carthaginians before Syracuse. "Et primo temporis ac loci vitio et ægri erant, et moriebantur; postea curatio ipsa et contactus ægrorum vulgabant morbos." Livy: lib. xxv. § 26.

† The Sweating Sickness, called also the English Sickness, because exclusively confined to them: Vid. *Hecker's Epid. of the Middle Ages*.

medical authorities, that all epidemics of a pestilential character came invariably from the East, as stated by Pliny: "*A meridianis partibus, ad occasum solis pestilentiam semper ire,*" thus showing their intimate relation to the atmosphere which accompanies the earth in its rotation, has tended further to embarrass the progress of discovery. Always looking away from man, his migrations and his surroundings, to some occult agency in sun or breeze, the world has been perpetually clinging to this ancient dogma of an unlearned age. In any other branch of inquiry but this, it would have been impossible for error to maintain its foothold so persistently; but in matters affecting human life or health, experience everywhere shows that the mind is ever captivated by the wonderful and inane. It rejects the palpable and concrete, and takes refuge gladly in the sphere of the impalpable. It has required centuries of suffering—of diseases that might have been prevented—and of unnecessary sacrifice of useful lives—to break the fetters of this old delusion; and even now, every case of disease whose origin cannot be mathematically demonstrated, is, by preference, ascribed to some weird agency; and the weaker converts to modern ways of thinking are ready at once to rush back into the arms of their pagan idol, Fate.

But in proportion as it has been recognized that zymotic diseases are born of local exciting causes, and attention has been given to removing these, the mists of doubt and ancient darkness have been swept from before their origin. And whether a Queen Mary die of small-pox, or a Prince Albert of typhoid

fever, amid the surroundings and assumed security of a palace, science in either case recognises a similar cause for both in a specific local infection. Glimmerings of such convictions as these meet us everywhere in the past history of Medicine,\* yet popular prejudice still clings to ancient traditions ; and a system of Sanitary Police, involving the creation of Boards of Health, has been one of the slowest additions made to the municipal governments of modern nations. Everything but this had, until recently, been provided for by the jealous eye of authority. Commerce and the Arts, Agriculture and Education, the liberal Professions and the National defences, were all secured in their separate and several necessities. The whole power of the nation was ready to move at any moment to their relief, and the taxes levied in support of all these sources of national wealth and strength and splendor, were paid with un murmuring acquiescence. But the public health, to the mass of the people everywhere, is only a name floating in the air, a verbal sphinx, an imaginary conceit, born from the brain of an ideologist ! And when it comes to taxing a community to preserve it, the first question raised by all citizens, especially tax-payers, is, What is all this worth to us ? and will it pay in return ?

Now, to the statesman and political economist, public health is public wealth. The terms are

\* Atque ea vis morborum . . . . .

Aut extrinsecus, ut nubes nebulæque superne,  
Per cœlum veniunt ; aut ipsa sæpe coorta  
De terra surgunt, ubi putrorem humida nacta est  
Impestivis pluviisque et solibus icta.

Lucretius : *De Nat. Rerum*, lib. vi., 1097.



synonymous. Secure the one and the other will surely follow. Once make it an assured fact, that the public health of a city will be preserved against the spread of infectious diseases, and you at the same time invite all mankind to make it their home. Wealth flows to it—patronage gives activity to the arts—commerce is quickened to supply its wants, and behind all, motherly agriculture spreads her arms over new fields in order to feed the myriads of consumers who live, move, and have their being, in the metropolis. Reverse this picture, and what is the consequence? Men flee from the plague-doomed city; its arts are paralyzed; its population, constantly decimated, gradually dwindles to an insignificant fraction; commerce avoids its walls, since it finds no marts there, and a chronic lethargy settles upon everything. A comparison of the cities of India and Turkey with those of Western Europe will furnish a fair illustration of this law. Public health everywhere means public wealth, prosperity, and increase of population; its opposite condition means commercial stagnation and depopulation. If men would only look at these questions in a rational way, they would soon see that health is always a more economical state than disease, and that an epidemic is one of the most costly indulgences which any city can allow itself. The cholera of last year in Paris is said to have entailed a loss of over 6,000,000 francs upon the trade of that city, irrespective of the cost of medical provision for the sick; and if we assume this latter at the low figure of 500,000 francs, we shall see that, judging from the expense of keeping other

cities free from the same epidemic, the Parisians might have saved themselves at *one-tenth* the amount actually lost. This is not the first time such a lesson has been taught mankind, and were it only improved, untold good would flow from it in the future.

Although it is a generally accepted belief that such epidemics as ravaged the civilized world during the Middle Ages can never again occur, owing to improvements in modes of living, yet this statement must be received with some modification. If all New York were as Baxter or Mulberry streets last year, and no competent Board of Health existed with plenary powers of abating nuisances, there is no good reason why the same scenes described by Defoe or Thucydides might not be re-enacted. The circumstances which developed the plague at Athens, or in Milan, or London, can be produced just as well in our midst. Indeed, they have existed, until recently, on a larger scale than the public generally were aware, and all that was wanting was the specific germ of disease to produce an epidemic.

This fact was felt long ago to be the case in this city, where, with great natural advantages for salubrity, a larger mortality annually occurred among children in particular, than seemed proportionate to the population. The steady increase of typhus and typhoid led also to the conviction that we were cultivating special foci of infection in our midst, like the older European capitals; and were thus likely in time to establish permanent homes for diseases of a zymotic character. Under the old *régime* of the City Inspector's office, distinguished chiefly for its political

ascendency in the city government, and its slight attention to the sanitary wants of the population, little was to be expected, in the nature of an improvement of the public health. Instead of being a Medical Board of Health, this officer, with his twenty or more lay wardens, constituted a political Board of Health. The consequences are too well known to need more than a passing allusion. Politics were the first consideration and health the last.

Under this disgraceful state of things, we might have continued to this present day—despite the zealous, indefatigable labors of such philanthropic bodies as the New York Sanitary Association, the Citizens' Association, our own Academy, and the State Medical Society, all of whom had annually besought the Legislature to pass a Health Bill for this city, placing the control of sanitary matters where it properly belonged, under the supervision and control of physicians—we might, I repeat it, still have remained in the fetters of past official inefficiency, had not the threatened visitation of the Cholera last spring, sounded an alarm throughout the land, which paralyzed former opposition, and led men to do, through craven fear, what duty had vainly besought of them for a decade of years. A Health Bill was at last passed, and our present efficient, because scientific; and honest, because unpolitical; and competent, because largely medical, Board of Health was created. With a notoriously dirty city to cleanse, with but a few weeks in which to do it (the cholera having already reached our shores), and with all the multifarious duties of organization, selection of competent assist-

ants, sanitary inspection of every part and portion of a large city, and setting in motion the wheels of a reform likely to disturb purlieus, cloacæ, and noxious occupations, grown sacred by prescription under all previous administrations, was a task from which Hercules himself might have recoiled. For when this hero began to cleanse the Augean stables, we are not told that judicial thunderbolts were hurled at his head in the form of injunctions; nor when he undertook to slay the Lernean Hydra, that he was driven off by a set of stupid wretches, anxious to be devoured by that many-headed beast. Yet, as is well known, when the present Board of Health began its labors, innumerable obstacles were put in their way, not only by the lower classes, whose ignorance might excuse them, but by a far more intelligent one, in whom the greed of gain had overpowered all other considerations save that of personal advantage. It may be said, perhaps, that there is nothing new in this form of opposition, which all Boards of Health have had similarly to encounter, yet, granting this to be true, its repetition becomes none the less disgraceful to humanity.

It is not necessary, however, that I should allude, in detail, to the labors of this most conscientious Board of medical guardians, all of whom have labored with equal energy to promote the cause of science, and to preserve the public health. Not only our citizens will testify to this, in token of their grateful admiration for these philanthropic services, but the whole country has looked to them with solicitude, as to watchmen upon our eastern towers, ready to



meet, and to turn aside the shafts of the most dreaded of pestilences. When, therefore, a Judge, from the high seat of judicature, announced it as his opinion • that they had, during the past season alone, saved the city ten thousand lives, I am sure he only reiterated the popular conviction and sentiment of the whole metropolis. As members of this Academy, their achievements become part of its legitimate inheritance; and the glory of their labors, reflecting itself upon this nursery of medical science and philanthropy, will, let us hope, inspire the citizens of New York to look upon their Academy of Medicine with additional respect and veneration; to cherish its prosperity, as essentially allied to their best interests, and to endow it with a permanent home, which will render it in future as metropolitan in its foundations as it is in its influences.

The success which crowned the labors of our Board of Health, in its late campaign against the cholera, was mainly due to the fact that, marching in the van of the century, instead of behind it, they regarded prophylaxis as the true instrument with which to dissipate the germs of all forms of pestilence whether domestic or exotic. It was not an idle boast of our late Health Physician, that he had *anchored* the cholera last winter in the harbor, for subsequent experience proved that this fact might be indefinitely repeated, and that moreover, wherever cholera anchored *itself*, it would cling with wonderful tenacity. This law of manifestation had been sufficiently well observed in other zymotic diseases, like typhus and typhoid, and the “stamping-out” pro-

cess, which has proved so successful in cholera, was predicated solely upon it. Repeated experiments at home and abroad, have shown that this is the true scientific view to take of all zymotic diseases, for as fast, and as often as prophylactic measures are addressed to them as organic products, they may be controlled, if not absolutely prevented. This would tend to show that their morbid principle is not a gaseous emanation, indefinitely distributed, nor generally diffused through the atmosphere, but rather a film of organic germs, starting from a central point, capable of specific transportation, but also dispersible and decomposable in time, by atmospheric vicissitudes. As soon, therefore, as this law shall be generally recognised, and a similar treatment universally addressed to this class of diseases, wherever Boards of Health exist, there seems no good reason why all such plagues should not be brought within the most insignificant demonstrations of themselves, and perpetually kept so, any more than has been the case with small-pox, since Jenner's immortal discovery. The wealth and the weight of evidence accumulated on this point, are sufficient to justify the deduction of a great principle in Etiology; and because every case cannot be traced to an obvious source of infection, let us not, in this day of meridional civilization, commit the anachronism of blaming the sun, or the moon, or the stars, or the precession of the equinoxes, for those evils which our own shortcomings have brought upon us.

## QUARANTINES.

Since the establishment of quarantines in Europe, visitations of imported disease have diminished to such a degree as no longer to be feared. Naples, Genoa, Milan, Marseilles, all the great cities lying on the highways of communication between the Eastern and Western nations, were formerly scourged with periodic regularity by imported disease. The oriental plague extended itself habitually to London; and the famous Black Death of the Middle Ages, which was but a variety of the same disease, was carried to Iceland, and even to Greenland. These melancholy eras, which the Christian nations, in imitation of their pagan neighbors, long looked upon as fatalities not to be avoided, have ceased to return just in proportion as rational systems of quarantine have been established. The objection that they are restrictions upon commerce does not hold good against them when properly managed; for, with suitable buildings and appliances passengers may be disembarked, and ships or cargoes disinfected in so short a time, that it constitutes but a small tax upon capital, as set against human life. And by extending, as could easily be done, the period of *demurrage* of vessels, commercial usage could, without absolute detriment, lend its assistance to the Health Authorities. It is only the voice of cupidity which cries out against the enforcement of quarantine regulations; and when this mammon spirit, in over-crowding packet-ships to glut its greed, favors the development of pestilential diseases among their passengers, it has no right to complain if

the law of self-preservation compels communities to arrest its floating pest-houses, and subject them to a long detention and purification. Indeed, and by parity of reason, if railroad corporations are made responsible in damages for the life of every passenger lost through their neglect, I cannot see why owners of packet-ships should not incur equal responsibility as common carriers, for the lives intrusted to their care. Let this law once be enforced, and it is very certain that there would be much less necessity for quarantine detentions than now exists. The universal law of compensation applies here as elsewhere, so that every excess, in whatever direction committed, is sure to invoke its appropriate penalty. That quarantines, in some form, are necessary, is a subject no longer open for discussion. The world, after several centuries of experience, has decided this question in the affirmative. And if merchants and shipmasters would only look at it with an unprejudiced eye, they would soon see that it is for their best interests to coöperate with the Health Authorities in improving the sanitary condition of ships, by doing which they would so lighten the exactions of quarantine as to render them practically trivial. When all men equally discharge their duties to society with honesty and sincerity of purpose, its wheels revolve smoothly and without friction against any part; it is only those who take "short cuts" to wealth or preferment, and find themselves entangled in the by-paths of indirection, who complain of the hardship of the laws. The laws harm none but wrongdoers, for they are founded upon justice, and justice



“is the constant and perpetual desire to render to each one his due.”

If, then, there be any value in prophylaxis as a science constituting a fundamental department of Rational Medicine, it is due to a better acquaintance with the laws of nature, and a corresponding preëminence assigned to them over mere rules of art. If in an age of positivism like our own, it is felt to be our duty not to leave to conjecture what is susceptible of proof, then it is plain that the laws of the material universe, in their relations to each other, teach us, within our finite sphere, the doctrine of causation. Beneath the Creator's permission all things are as they are, but this does not exclude His assent to our attempts at improving them. Every age, then, has been the missionary of some idea which, perhaps, born in the distant past, has only come to maturity long after mankind had forgotten its origin. The philosophy of Cicero, so nearly Christian in character, was but the reflection of that of Socrates and Plato; the Reformation in Germany was the unshackling of the human mind, here and there previously attempted, from the fetters of ecclesiastical despotism; action and reaction—ebb and flow—increase and diminution—illumination and obscuration; such has been the law of motion in the human mind. Yet its progress, despite the elliptical orbit in which it moves, has always been forward in the regions of space, advancing from the physical to the inane and metaphysical. The metaphysical, is simply a circle, round whose circumference men have voyaged from age to age, and from generation to generation, in one well beaten

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path. It is the grotto of Egeria into which men flee when they have lost their way either in morals or physics. It is a lifeless system, without youth or age, and was as mature at creation as it is now. It is the edge of the medal of life—a mere line, which tells us nothing of either side; a middle nothing concerning which you may predicate affirmation or negation. In other words, it is the domain where proof alone of all things, is excluded, and hypothesis made the foundation and superstructure of systems.

Being alike useless to morals or to physics, our own positive age, studying men from below upward, from organization to mental endowments, considers all the problems of life as belonging to one or the other of these two departments. And, confining myself here exclusively to the physical, I trust I have at least suggested, if I have not shown, how that physical nature may find in its own laws the best means for preventing its premature destruction.

We need therefore to engraft more of the medical element into education and into legislation. We need it in order to apportion in childhood education according to a physical discrimination of powers, aptitudes, and tendencies. As all kinds of food are not similarly appropriate to all ages, temperaments, or conditions of life, so forms of education should vary to meet the organic tendencies of individual men. It is useless to attempt to force development prematurely, or to alter radical conditions of structure. Nature will not be outraged nor driven from her seat with impunity. As Bacon has well said, "Force maketh nature more violent in return." How much

of the impaired health of our youth is not owing to the violation of this law of relation between temperament and study, of excess of rhetorical over gymnastic cultivation, or of undue and insalubrious labor, often extended into night, and at that tender age, when the foundations of maturity should be laid? And in those notoriously unhealthy arts which abridge human life, or doom it to a valetudinarian existence, how much of evil might not a rational system of prophylaxis prevent?

Is it saying too much, therefore, to assert that State Medicine is a legitimate branch of State Government? Or that the duty which any commonwealth owes its citizens is but half discharged, in which protection is not afforded to all against preventable disease as well as against crimes addressed to the person or property? Is it saying too much to assert that thousands of valuable lives might be annually saved to the State by a recognition of this obligation, and the organization of proper means under it? Think what numbers might have been saved in the long dreary catalogue of past epidemics! What lives during the past season, even, might have been preserved in Cincinnati, Chicago, and St. Louis, had a scientific prevision of the sanitary necessities of those cities directed their government!

The chief science of our day—of this day of supreme civilization, is the science of sociology, or how best to develop society in the aggregate, with a view to its prosperity, happiness, and perpetuity. The mathematical or mechanical sciences can take care of themselves. They have been placed upon immutable

foundations, and will continue to develop from the simple force of their acquired momentum. But the science of sociology, of human society, that society which is both fluent and stagnant, kaleidoscopic and stereotyped, how shall it be studied except through the fundamental laws of its own organization? How shall it be preserved except through the operation of those same laws? It is only through a system of State Medicine animating legislation that the perpetuity of society can be secured and the physical degeneracy of the race prevented. For after all, in the midst of our meridional civilization, more brilliant than that of Rome, more active than that of Athens, the melancholy truth stares us out of countenance that the human system is everywhere overstrained; that a condition of nervous erethism pervades the world and tinges all its efforts; and that active life, being more than ever mental, is becoming little else than a series of electrical waves, each of which but enfeebles the battery which emits it. Congregation and overcrowding of masses in great cities, and feverish ebullitional activity of mind, are the two most carking sources of physical degeneration in our day.

To meet this crying evil we need a system of Sanitary Legislation which shall go to the very root of the matter; which shall not be limited to cities or ships, but extend to villages, hamlets, and houses. We need a system which shall give us a Medical Inspection of school-houses, of churches, of theatres, of lecture-rooms, of workshops, and wherever unhealthy occupations are carried on; of court-rooms, prisons,



and all penal establishments ; of hotels, markets, and food ; of steamboats, and wherever man makes a temporary or prolonged stay. Nor should I think it out of place in this Academy, to recommend to the American Tract Society the publication of a number of Health Tracts, for distribution by their colporteurs and missionaries among the tenement-house population of this and other cities, alongside with their religious publications. Let the poor be taught that there is religion in cleanliness, in ventilation, and in good food ; let them but once be induced to put these lessons into practice, and we may rest assured their spiritual culture and moral elevation will be rendered all the more easy and certain.

But in order to be consistent, for we cannot expect either Legislatures or Tract Societies to honor a science which we ourselves ignore, we should introduce the study of Hygiene into all our Medical schools, as a systematic branch of Medical Education. It is sheer nonsense to speak of it as unpractical, or not immediately related to the daily wants of the practitioner. On the contrary it is eminently practical, and supplies him with extra eyes, extra hands, and extra instrumentalities for every hour's labor that he performs. It is not simply necessary, but indispensable to the successful practice of the Healing art ; and just in proportion as its assistance is invoked do we perceive that it imparts energy to every step taken in the treatment of disease ; or better still, is the only power given us by the Creator, to protect ourselves against its assaults. For the purpose, therefore, of elevating medical education into the highest sphere

of possible utility to mankind, we must reinstate this dethroned divinity. We must place her shrine at the very entrance of our medical schools, in order that students may be first instructed by her, before passing to the dogmatic philosophy of the amphitheatre. It is from her maternal lips that they will learn this true creed of all Rational Medicine.

*"Non physicus curat vitam, quamvis bene longa,  
Natura quæ conservat, descendens corpora sanat."*

And under this view of Providential agencies created to meet every necessity of our finite life, they will learn in humility to depend more upon God, operating through nature, than upon reason operating through art.

In this particular our Academy has a great duty to perform, both to herself and to the world. Seated in the metropolis of this western hemisphere as the Guardian of the "dry light" of medical philosophy, all eyes here and abroad are turned towards her in hope, and with the assurance that nothing but the purest science will be cultivated within her courts. Free from the incubus of inherited dogmatisms, and knowing that in the light of God alone can we see light, let her march with the century and in its van, seeking for truth everywhere, and willing to stoop, or even to retrace her steps in its pursuit. As in Egypt, the vote of a prophet was held equal to an hundred hands, so her voice, whenever uttered, falls with hundred-fold influence upon the world of intellect. For she stands "proudly eminent" among her

American sisters, destined alike by position and culture, to collect the earliest rays of dawning progress, that, like some tall mountain peak she may reflect them in genial, fructifying beams, over the length and breadth of the continent.





